California State Fisheries Laboratory
Long Beach, California

State of California
The Resources Agency
DEPARTMENT OF FISH AND GAME

DIABLO CANYON POWER PLANT SITE ECOLOGICAL STUDY
QUARTERLY REPORT NO. 22

October 1 - December 31, 1978

by

Daniel W. Gotshall
Laurence L. Laurent
and
John J. Grant

PACIFIC GAS AND ELECTRIC COMPANY
COOPERATIVE RESEARCH AGREEMENT 5-26-77

MARINE RESOURCES

Administrative Report No. 79-6

February 1979

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ABSTRACT

Field work for this quarter consisted of completion of random 1/4-m^2 subtidal stations from the summer sampling season. In addition, one permanent subtidal station was surveyed. No intertidal stations were surveyed. Sea otters, *Enhydra lutris*, remained scarce in the vicinity of the power plant.

Lab work was comprised of processing subtidal algae samples and sorting and identifying invertebrates from intertidal samples. Analysis of preoperational data for final report proceeded apace.

1/ Marine Resources Administrative Report No. 79-6, May 1979.

2/ Operations Research Branch, Post Office Box 98, Avila Beach, CA 93424.

This is the 22nd quarterly report submitted in partial fulfillment of Research Contract No. 5-26-77 between the Department of Fish and Game and the Pacific Gas and Electric Company. Through this contract, the Department of Fish and Game is to conduct ecological monitoring studies to determine what changes have occurred since 1970 and 1971 in the baseline inventory of the marine biota, with species references to fishes and abalones.

Quarterly reports will be followed by annual reports. Full tables and species lists will be included in each annual report.

Submitted To:

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Submitted By:

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INTRODUCTION

Most of our field work was completed during the quarter, thus allowing all project personnel to concentrate their time on analyzing the data collected since 1973 and writing the final report of our preoperational studies.

Our quarterly reports are interim progress reports and do not function as Department of Fish and Game environmental impact reports.

OPERATIONS

All of the random 1/4-m^2 subtidal stations were completed and the data transferred to computer forms for keypunching. Most of our time was spent reviewing and correcting the data output from the computer. Most of the subtidal invertebrate data have been analyzed utilizing the Kruskal-Wallis rank test. The intertidal data analysis will be completed during the next quarter. We hope to have a rough draft of the final report completed by the end of the next quarter.

CONTROL STATIONS

Subtidal Activities

Eleven random 1/4-m^2 stations consisting of four quadrats each were sampled during the quarter. This completes the sampling effort in the North Control for the year. No fish counts were conducted due to a lack of time. One permanent station was surveyed, No. 6, in Fields' Cove.

Algae

Results

Algae samples that were taken from 1/4-m^2 quadrats during this quarter have been sorted in the laboratory and the data are being prepared for analysis.

Invertebrates

Results

The most commonly observed animals in the 44 quadrats surveyed were *Tegula brunnea* (70%), *Patiria miniata* (48%), and *Henricia leviuscula* (45%). The most abundant animals were *Balanophyllia elegans* (mean density = 3.45 per 1/4 m^2), *Tegula brunnea* (2.25 per 1/4 m^2), and *Epiactis prolifera* (1.52 per 1/4 m^2). Giant red sea urchins, *Strongylocentrotus franciscanus*, were observed in 27% of the quadrats, most were juveniles.

Invertebrate numbers at permanent station No. 6 showed little change.

Intertidal Activities

As noted in previous reports, no field work is being conducted during this period on random intertidal stations. Permanent stations will be surveyed during the next quarter. There were 11 sea otter, *Enhydra lutris*, observation days this quarter.

Sea Otters

Results

Eight of the nine otter sightings in control station areas occurred in the North Control (Fields' Cove) area. Seven of these were sighted during the first fortnight in October. Most sightings were of individual animals; however, on one occasion, three otters were observed rafting together. The other sighting occurred in the south control area, also during the first two weeks in October.

The paucity of sea otter sightings this quarter reflects similar findings from the same period in previous years. It is possible that their absence from the immediate area during this time may be related to foraging patterns and increased rafting places among the dense kelp nearby.

NORTH DIABLO COVE

Subtidal Activities

All 24 of the scheduled random 1/4-m^2 stations in Diablo Cove were completed in August and reported upon in Quarterly Report No. 21.

Intertidal Activities

No random stations were surveyed here; permanent stations will be surveyed next quarter. Sea otter observations were made on eleven days.

Sea Otters

Results

No otters were sighted in North Diablo Cove during this quarter.

SOUTH DIABLO COVE

Intertidal Activities

No random stations were surveyed here; permanent stations will be surveyed next quarter.

Sea Otters

Results

No otters were sighted in South Diablo Cove.

DIABLO POINT

Intertidal Activities

No random stations were surveyed here; permanent stations will be surveyed next quarter.

Sea Otters

Results

No otters were sighted at Diablo Point.

APPENDIX I

MAN-DAYS SPENT AT DIABLO CANYON POWER PLANT SITE

October 1 - December 31, 1978

Subtidal Surveys:

	October 2, 26, 27, December 15
Participants:	Gotshall, Laurent, Grant
	October 19
Participants:	Gotshall, Laurent
	October 25, November 15
Participants:	Gotshall, Grant
	October 26, November 7, 8
Participants:	Laurent, Grant

Total Man-Days During Quarter: 250 Total Stations Surveyed: 12

Total Man-Days at Site*: 177 Travel Time Man-Days†: 11

Boat Time (Hours): 14.5

* Excludes time off for vacation, sick leave, etc., but includes both laboratory as well as field time.

† Includes all trips away from site.

Project Personnel:

Daniel W. Gotshall	Senior Marine Biologist, Project Leader
Laurence L. Laurent	Associate Marine Biologist
John J. Grant	Assistant Marine Biologist
Sally A. Barker	Stenographer
Rosemary C. Bowker	Graduate Student Assistant
Steven W. Wiley	Graduate Student Assistant
Katharine M. Wright	Student Assistant